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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,263	11/17/2003	Masahiro Kimura	0943-0142P	1737
2292	7590	04/21/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			WINAKUR, ERIC FRANK	
			ART UNIT	PAPER NUMBER
			3768	

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Notice of Allowability

Application No.

10/713,263

Examiner

Eric F. Winakur

Applicant(s)

KIMURA, MASAHIRO

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## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 8 March 2006.
2. ☒ The allowed claim(s) is/are 1-19 and 21-23.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 3/8/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

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1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Carl Thomsen on 30 March 2006.

The application has been amended as follows:

Claim 1 has been rewritten as follows:

1. An optical measuring apparatus for irradiating near infrared light to a desired portion of an object to be measured, receiving arriving light from the desired portion and acquiring information about a predetermined substance present in the desired portion on the basis of analysis of data related to the received arriving light, said optical measuring apparatus comprises:

a cover member removably attachable to the object to be measured; and

a measuring unit provided on said cover member and including:

at least one light irradiation section for directly irradiating the near infrared light to the surface of the desired portion of the object; and

at least one light reception section for receiving the arriving light from the desired portion of the object,

wherein, in a state where said cover member is attached to the object to be measured, said light irradiation section and said light reception section are positioned out of contact with the surface of the desired portion of the object,

wherein said light irradiation section includes at least one optical fiber for passing therethrough the near infrared light, the optical fiber being mounted to a movable support that undergoes predetermined displacement [control] during the irradiation of the near infrared light from the light irradiation section.

Claim 3 was amended as follows:

3. The optical measuring apparatus as claimed in claim 1 [which further] wherein said movable support comprises a scanning mechanism, and a condenser lens supported at the distal end of said light irradiation section via said scanning mechanism, and

wherein, during optical measurement by said optical scanning apparatus, said condenser lens is variable, by said scanning mechanism, in an angular position thereof relative to the surface of the desired portion of the object so as to change an irradiation direction of the near infrared light.

Claim 4 was amended as follows:

4. The optical measuring apparatus as claimed in claim 1 [which further] wherein said movable support comprises a scanning mechanism, and wherein a whole of said light irradiation section is supported by said scanning mechanism, and

wherein, during optical measurement by said optical scanning apparatus, said light irradiation section is variable, by said scanning mechanism, in an angular position thereof relative to the surface of the desired portion of the object so as to change an irradiation direction of the near infrared light.

Claim 5 was amended as follows:

5. The optical measuring apparatus as claimed in claim 1, [which further] wherein said movable support comprises an adjustment section mounted on an outside of the cover member for supporting said light irradiation section; and

wherein the adjustment section includes a ring motor for moving said light irradiation section in an axial direction thereof with respect to the surface of the desired portion of the object to thereby adjust a distance between said light irradiation section and the surface of the desired portion of the object to be measured.

Claim 9 was amended as follows:

9. The optical measuring apparatus as claimed in claim 1, further comprising:

a light detection mechanism for detecting the arriving light [from the desired portion of the object] received by said at least one light reception section, the object being a living body;

a pulse wave detection section for detecting a pulse wave in another portion of the living body separate from the desired portion and thereby generating a signal indicative of the detected pulse wave;

an arithmetic operation section for subtracting pulse wave data, obtained on the basis of the signal generated by said pulse wave detection section, from measurement data obtained on the basis of the arriving light detected by said light detection mechanism; and

a display section for displaying a result of an arithmetic operation performed by said arithmetic operation section.

Claim 10 was amended as follows:

10. The optical measuring apparatus as claimed in claim 9 wherein said at least one light irradiation [mechanism] section includes at least one light source for emitting light of a wavelength in a near infrared range, and at least one optical fiber for transmitting therethrough the light emitted by said light source.

Claim 11 was amended as follows:

11. The optical measuring apparatus as claimed in claim 9 wherein said at least one light irradiation [mechanism] section includes a light source for emitting light of a wavelength in a near infrared range, a spectroscope for dispersing the light emitted by said light source, and an optical fiber for outputting the light dispersed by said spectroscope.

Claim 18 was amended as follows:

18. The optical measuring apparatus as claimed in claim 10 wherein said [light irradiation mechanism] movable support includes:

a condenser lens provided at a distal end of said optical fiber;

a feed screw mechanism for controlling a distance between said condenser lens and a surface of the desired portion of the living body to be measured; and

a piezoelectric element contractible or expandable in response to a voltage applied thereto so as to control an angular position of said condenser lens relative to the surface of the desired portion.

Claim 21 was amended as follows:

21. [the] The optical measuring apparatus as claimed in claim 1, further comprising a controlling computer including a program to perform an optical measuring process, said program comprising:

a step of moving, by means of [light-irradiation-mechanism control means] said movable support, [a light irradiation mechanism] said at least one optical fiber so that a light outputting end of said [light irradiation mechanism] at least one optical fiber gets closer to [a] the desired portion of an object to be measured;

a step of determining, on the basis of a distance value measured by distance measuring means, whether the light outputting end of said [light irradiation mechanism] at least one optical fiber has reached a predetermined position near a surface of the desired portion;

a step of irradiating near infrared light, emitted by a light source, to the desired portion of the object via the light outputting end of said [light irradiation mechanism] at least one optical fiber while, by means of a scanning mechanism, causing the light outputting end to make scanning movement relative to the surface of the desired portion;

a step of removing a pulse wave detection signal representative of a pulse wave detected by pulse wave detection means from a light detection signal representative of scattering reflected light detected by light detection means; and

a step of calculating, on the basis of the light detection signal having the pulse wave detection signal removed therefrom by said step of removing, a concentration of a biological substance present in the desired portion of the object to be measured.

Claim 22 was amended as follows:

22. An optical measuring apparatus for irradiating near infrared light to a desired portion of an object to be measured, receiving arriving light from the desired portion and acquiring information about a predetermined substance present in the desired portion on the basis of analysis of data related to the received arriving light, said optical measuring apparatus comprises:

a cover member removably attachable to the object to be measured; and

a measuring unit provided on said cover member and including:

at least one light irradiation section for irradiating the near infrared light to the desired portion of the object; and

at least one light reception section for receiving the arriving light from the desired portion of the object,

wherein, in a state where said cover member is attached to the object to be measured, said light irradiation section and said light reception section are positioned out of contact with the desired portion of the object, and further comprising:

a ring motor mounted on an outer side of the cover member for moving said light irradiation section an axial direction thereof with respect to a surface of the desired portion of the object to thereby adjust a distance between said light irradiation section and the surface of the desired portion of the object to be measured; and



a plurality of piezoelectric elements mounted on an inner side of the cover member for changing an irradiation direction of the near infrared light relative to the surface of the desired portion of the object.

2. The following is an examiner's statement of reasons for allowance: Applicant agreed to amend claim 1 to positively recite "a movable support" element. Further, in claims 1 and 22, "provide" was changed to "provided" and in claim 9, "desire" was changed to "desired" for grammatical purposes. In claims 3 - 5, 9 - 11, 18, and 21, changes were made to provide internal consistency between the claims.

3. Klingenbeck-Regn teach an apparatus, as shown in Figure 1, for tissue examination that includes compression plates [considered a cover], a measuring unit including a portion provided on the cover and having light sources and photomultipliers connected via optical fibers to the measured object, and a position adjustment unit in contact with the optical fibers for moving the optical fibers relative to the measured object. However, the apparatus is designed to always have the compression plates between the optical fibers and the measured object, and thus, is not configured (nor is it modifiable) for "directly" irradiating the light to the surface of the desired portion of the object, as set forth in claim 1 as amended above.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric F. Winakur whose telephone number is 571/272-4736. The examiner can normally be reached on M-Th, 7:30-5; alternate Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia Bianco can be reached on 571/272-4940. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Eric F Winakur  
Primary Examiner  
Art Unit 3735

16 April 2006